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Roundup

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Seeing things more clearly

Space Shuttle windshield problem solved by JSC team

By Eric Raub

The cockpit of the Space Shuttle provides a great view as the orbiter speeds away from the Earth, flies through space and glides back down. But what if the crew could barely see out of the window? Thanks to a JSC team, those worries are now over.

Since the earliest days of the Space Shuttle Program, a strange "haze" had always developed on the front windows of the orbiter. The haze got progressively worse after each flight. It was so bad after STS-8 that the problem prompted an investigation.

The investigation classified the haze as a deposit, probably created by flying through volcanic ash from a distant eruption. Yet the problem never went away–with or without distant erupting volcanoes–and exhibited strange characteristics. Those characteristics led some to question whether this haze was only a deposit.

Eventually the windows had to be replaced and they ended up at the Southwest Research Institute in San Antonio, Texas. After carefully analyzing the surface they found that the windows didn't get dirty, they got sandblasted.

"We were happy and complacent to think it was a deposit," said Lynda Estes, Space Shuttle and International Space Station window subsystem manager. "Southwest Research determined it was a frosting effect like grit-blasting." This grit-blasting resulted not only in an obscured view through the window, it also caused tiny microfractures in the glass surface.

Considering the affected Space Shuttle windows cost approximately $70,000 each, the news that something regularly spewed debris onto them quickly brought two questions to the forefront: What caused the microfractures, or haze, and how could this be stopped?

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